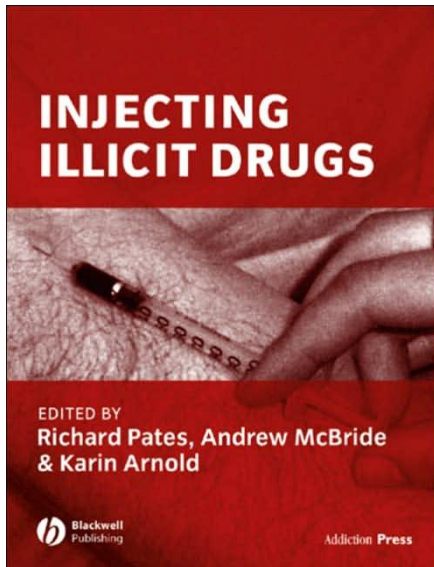


Chapter 2



The Eye of the Needle: an Ethno-Epidemiological Analysis of Injecting Drug Use

Jean-Paul Grund (The Netherlands/Austria)

Reference: Grund J-PC: The Eye of the Needle: an Ethno-Epidemiological Analysis of Injecting Drug Use. In: Pates R, McBride and Arnold (Eds): Injecting Illicit Drugs, London: Blackwell, 2005, pp. 11-32.

1. Introduction

The global diffusion of injecting drug use

Elsewhere in this volume, Pates and Wichter (chapter1) trace the birth and development of the needle and syringe and the first medical and recreational experiences with this technical innovation—famous and infamous at once, because of its association with both the global eradication and diffusion of life-threatening infectious diseases. Recreational or non-medical drug injecting remained a primarily western phenomenon until late into the 20th century. But globalization and global drug prohibition have resulted in the world-wide diffusion of drug injection, most strikingly into drug production areas and adjacent sub-regions, where traditionally milder preparations of the same alkaloids (or their precursors) were being consumed through less hazardous modes of administration.

In 1992, 80 countries reported injecting drug use to the World Health Organization (WHO) (Stimson & Choopanya, 1998; CDUHR News, 2002). In 1995, this number had increased to 121 (Stimson & Choopanya, 1998) and by 1999 to 134 (CDUHR News, 2002). In 2003, 136 countries reported injecting drug use (WHO, 2004). Thus, globally a 70% increase can be witnessed in countries reporting drug injecting to WHO in the last 11 years.

As Stimson & Choopanya (1998) note, these reports do not contain information on the actual scale and nature of this largely underground activity. There may be some countries with isolated cases, but studies conducted in countries reporting drug injecting for the first time suggest that these reports reflect recently emerged changes in drug use patterns, and not previous

underreporting (Stimson & Choopanya, 1998). In the 1990s drug injecting has diffused rapidly in many countries, in Asia and the former Soviet Union in particular, and it has also taken a strong foothold in South America (Stimson, Des Jarlais & Ball, 1998).

Injecting vs. other routes of administration: a comparison of effects

Despite the above noted global increases, intravenous injecting is practiced only by a minority of opiate and other powder drug users and injecting is only one of the several routes of self-administration for heroin and many other drugs, albeit the most efficient one. There are three ways one can inject a drug: subcutaneously, intramuscularly and intravenously. Most 'powder drug'* injectors prefer intravenous injecting (mainlining), the most direct way of ingesting any drug into the body, whereas, for example steroid users (e.g. body builders) favour intramuscular injection.

Opiates, amphetamines and cocaine can be taken into the body via the various mucous membranes of the body, for example those under the tongue, in the nose (sniffing) stomach and intestines (swallowing), rectum (suppositories, enemas) and on the (female) genitals. Amphetamines are mostly sniffed or swallowed, while smoking methamphetamine ("Ice") has recently gained popularity in the US and elsewhere. Many amphetamine users in Australia and Northern Europe inject the drug. Sniffing is the most common mode in cocaine use. Smokable cocaine (base) or crack was deemed of epidemic proportions in the US in the 1990s and continues to be part of the drug menu of many heavy drug users in South America, the US and Western Europe. Heroin is mostly inhaled ("chasing the dragon") in many Asian countries and the Netherlands, while many 'new' users in the US take the drug intranasally. In their respective production areas, opium is traditionally smoked and ingested as part of folk medicine, while coca leaves are chewed while coca is part of many folk preparations as well (from tea to toothpaste).

Beyond the initial impact effect or "rush," all methods produce similar states of intoxication. But administration routes differ in several ways. Firstly, the speed with which a drug's effects become noticeable varies by the mode of administration: oral ingestion is characterized by gradual onset (anywhere between 15 and 60 minutes); applied intranasally, rectally or under the tongue, a dose will take noticeable effect after 5 to 10 minutes, while smoking, vapor inhalation (chasing and basing) and injecting produce their effects within seconds (Strang & Wells, 1988). Secondly, there are marked differences in overall bio-availability, with injecting giving clearly the most 'bang for the buck.' When chasing, the actual absorption of heroin is much lower and varies by the drug's chemical form (hydrochloride or base) of the heroin, processing impurities, diluents, inhalation technique and environment (Huizer, 1987; Mo & Way, 1966). Rectal insertion, recently promoted in Britain as a good harm reduction alternative for injecting,

* The term 'powder drug'—American drug slang—refers to drugs that can potentially be injected, in particular heroin and other opioids, the amphetamines and cocaine.

apparently results in relatively greater and faster absorption than intranasal application, while oral administration is hampered by stomach contents (Southwell, chapter 14).

Health consequences of powder drug use vary with route of administration and in that respect an important matter is that the various routes of administration have different overdose potential.*

Overdose potential is a function of the total amount of drugs ingested over a given time period and individual tolerance for the ingested substance. Therefore, overdose does not so much depend on onset speed, as a lethal dose can be absorbed over an extended period or built up in more than one dose (Garriot & Sturner, 1973). Although injecting carries the greatest risk for fatal overdose, anal insertion, oral ingestion and sniffing probably compete for second place, because, just as when injecting, a certain dose is entered into the body in one go and then gradually but definitely crosses the mucous membranes, even after the consumer goes into a "nod." In contrast, when chasing or smoking, the drug is administered in small incremental doses, which are felt instantly. Thus, chasers reach their desired high by sequentially administering small quantities of the drug. In theory this could add up to a lethal dose, but in practice the chance of overdose is small due to the steady and controlled titration inherent to this mode. Chasers may smoke themselves into a light state of unawareness --a nod-- but, as illustrated by the following statement of a Dutch chaser, this gradual build-up normally prevents fatalities:

"When you nod, you nod. And you can't add on to that level anymore."

Theoretically, smoking heroin from a "bong" (a chambered pipe, in which fumes are collected before being ingested in one inhalation) could increase the risk of overdose significantly, but this method is not really prevalent.

Injecting drug use and the spread of infectious diseases

IDUs have always been at risk of exposure to a wide range of blood borne viruses (BBVs) (Selwyn, 1993). Syringe-mediated malaria epidemics among IDU populations in non tropical areas have been reported as early as 1920 in Cairo, Egypt and the 1930s in New York, while more recently Brazil witnessed the re-emergence of malaria among people who injected drugs in areas where the disease had become rare (Donoghoe & Wodak, 1998). The first needle/syringe programs (NSPs) in the Netherlands were in response to outbreaks of HBV in the late 1970s.

Of the 80 countries reporting injecting drug use in 1992, 65% reported HIV infection associated with injection drug use (CDUHR News, 2002). By 1999, 85% of 134 countries reported HIV infection in IDUs (CDUHR News, 2002). However, according to the most recent data on the WHO website, only 68% of 136 countries reporting injecting drug use, also reported HIV infection

* For a comparison of health consequences of injecting and chasing, see e.g. Grund, 1993, Ch. 10.

(WHO, 2004). The decrease between 2004 and 1999 is not an actual reduction and may be explained by inconsistencies in data collection.

In a forthcoming paper, the secretariat of the in 2001 established UN Reference Group on HIV/AIDS Prevention and Care Among IDU in Developing and Transitional Countries reports on a systematic review of data pertaining to 130 countries with documented cases of drug injecting. Of those 130 countries, 78 (60%) reported HIV as well. Data on 119 countries could not be obtained (Aceijas et al., 2004). The secretariat presented its data with caution and views these data as a new and improved base-line measure. Nonetheless, based on the available data, a total of 13.2 million IDUs were estimated worldwide (0.3% of the estimated 4 billion adult population) by the end of 2003. The majority of those (10.3 million, 78%) live in developing and transitional countries (Aceijas et al., 2004). In the absence of appropriate and sufficient prevention measures, unfortunately still the case in most developing and transitional countries, these countries are at risk of large scale generalized HIV epidemics in the next 10 to 20 years, kindled by presently uncontrolled epidemics among IDUs (UNAIDS 2003).

Injecting drug use and public health

Globally, drug injecting was a fringe issue in public health policy making before the realization of the potentially widespread consequences of uncontrolled HIV epidemics among IDUs. In most countries, drug users were (and unfortunately remain) almost entirely dealt with by repressive, mandatory and otherwise intrusive policies that are fundamentally at odds with fundamental human rights, in particular the rights to health and privacy, and the protection against cruel, inhuman or degrading treatment or punishment., as defined in the Universal Declaration of Human Rights (United Nations, 1948; UNHCR/UNAIDS, 1998).

Taking the international scientific literature and/or UN documents as examples, the emergence and rapid spread of HIV among communities of drug injectors around the world has changed the way that the self-injection of psychoactive drugs for non-medical purposes is considered by societies. From a fringe issue, non-medical drug injecting has become a major (international) public health focus. Unfortunately, a quarter century into the HIV epidemic this increased attention and research has resulted in sufficient action to avert the spread of HIV among drug injectors in only a minority of countries. Most prevention efforts have focussed on what David Moore has called “technologies of the body”, behavioural strategies aiming to reduce individual exposure risks, while largely ignoring the “social, cultural and economic production and reproduction” of vulnerability (Moore, 2004).

Furthermore, the increased attention of policy makers on drug injecting has already started fading in many places.* As yet there has not been an example of an IDU-driven HIV epidemic

* What's more, the increased knowledge that all the attention for HIV among IDUs has brought about has not helped us from preventing the same from happening all over again across the globe. As Crofts (chapter 8) documents, the HIV epidemic among drug injectors has long overshadowed the even more rapid spread of another blood-borne pathogen, the hepatitis C virus (also see IJDP, 2004).

evolving into a large-scale generalized epidemic which would focus the attention of policy makers on the deplorable health and human rights situation of the large numbers of people who inject drugs, and the social, economic and (international) legislative determinants of these problems. Unfortunately, in several countries, such as Ukraine and several Asian countries such a transition may well be underway, but weaknesses in national surveillance systems make it extremely hard to accurately measure this process. For example, cases of sexual transmission among the officially registered HIV cases in Ukraine have increased, while transmission among IDUs apparently decreased (UNAIDS/WHO, 2003). However, a secondary analysis of the Ukrainian case registration and surveillance data concluded that most of this shift resulted from changes in testing patterns and testing saturation among IDUs. In two of the most affected oblasts (Donetsk and Odessa) about three quarters of established cases of sexual transmission concerned infections from IDUs and their sexual partners (Grund et al., 2003; UNAIDS, 2004).

The limitations of epidemiology

Epidemiologists spend much time on trying to track epidemics. Epidemiology provides us with valuable information on the course and in particular the *agents* of the spread of infectious diseases. But, despite their relevance to public health monitoring and planning, epidemiological data tell us little about the behaviours and the real-life contextual correlates that are at their core.

For example, traditional epidemiology has not kept pace with the consequences of rapidly advancing globalization during the last 30 years, which has become a powerful social and economic force. Globalization and in particular the resulting increase in inter-continental mobility, has had a tremendous impact on the spread of infectious diseases. Increased mobility resulted in the spread of previously more-or-less localized BBVs and has also contributed significantly to the global diffusion of drug injecting. But beyond merely contributing to the expanse of both of these public health threats, globalization has truly resulted in what Rodrick Wallace has called a "synergy of plagues" (Wallace 1988) by bringing stow-away viral travellers into contact with a new, faster vector of transmission: the intravenous needle and syringe. HIV is a textbook example.

In essence, epidemics are social processes. Despite their differences, HIV, tuberculosis or hepatitis C all follow this rule. In her noteworthy paper on the relationship between ethnography and epidemiology, Lisa Maher (2002) writes that "the politically loaded categories of epidemiological risk groups have essentialized entire populations, obscured the complex realities of risk practices and left little room for understanding how social conditions shape individual lives." She refers to the late Jonathan Mann who noted that, "applying classical epidemiological methods to HIV/AIDS ensures (pre-determines) that 'risk' will be defined in terms of individual determinants and individual behavior" (Mann, 1999). In the epidemiology of HIV and drug injecting this has resulted in a rather narrow focus in which the physical instruments of transmission (the syringe and needle) have been fetishized (Grund et al., 1992),

at the expense of understanding the social and cultural settings in which these instruments are used.

Epidemiological data may alert us to a shift in vulnerability underlying these numbers, “but they cannot tell us what is happening here or why. Even where the risk or patterning of a disease is known and quantifiable, the logic of its distribution or the reasons behind shifts and increases are not always apparent” (Maher, 2002). Thus, epidemiology has done remarkably poorly in including the other two cornerstones of the “Epidemiological Triad,” *host* and *environment*, into its analysis of disease spread.

While ethnography is not designed to quantify shifts in the burden of disease, it is particularly useful for identifying the human interactions that result in disease transmission. Ethnographic research offers compelling explanations of epidemiological phenomena by positioning the *agent* (e.g. HIV) and *vector* of spread (e.g. collective use of injecting equipment), in a dynamic interaction with the *host* (the IDU), and the risk *environment* (see e.g. Rhodes, 2002), the social networks of IDUs and the larger social structures that shape these, including underdevelopment, poverty, conflict, racism, drug legislation and its enforcement. As Maher writes (2002), “Ethnographic research has the capacity to ‘unpack’ the vulnerabilities flagged by epidemiological data, to identify the dynamic contexts of belief and action and the role of cultural disjunctions and local/global linkages in determining the health of populations.”

2. Participant observation of drug injecting

Literature searches in preparation of this chapter, searching for participant observation and other descriptive studies of drug injecting behaviours, found very few first-hand accounts. Therefore, much of what follows is based on my own ethnographic research and that of a few other researchers, who have directly observed people inject recreational drugs.

Between 1985 and 1992, I observed several hundred people inject drugs in Rotterdam, the Netherlands, first as an outreach worker running a peer-based needle exchange programme and then as part of fieldwork of an ethnographic study of the drug use patterns of heavy heroin and cocaine users. A key part of this study concerned participant observation of and informal interviews about actual drug using sessions (Grund, 1993a). In 1990 and 1991, I observed people in a shooting gallery in New Haven and on the streets of the Bronx, NY, when working with the then underground needle exchange program of Act Up. From 1993 to 1995, I conducted fieldwork for a NIDA funded study of a peer-driven HIV prevention intervention among IDUs in Connecticut. Furthermore, over the years I have met quite a large number of educated, more privileged people who inject drugs, with whom I have frequently engaged in discussions on drug injecting patterns, associated risk behaviour and their determinants.

Since 1995 I have been privileged to visit a large number of countries that have recently emerged following the dissolution of the “Soviet Bloc”. My work in these countries was to support the implementation of harm reduction approaches towards the (in some sub-regions

rapidly) emerging Twin-epidemics of drug use and HIV. During the daytime I talked with politicians, health and law enforcement policy makers, psychiatrists, drug specialists, infectious disease specialists, NGO representatives and church officials about drugs, HIV, harm reduction and effective drug treatment approaches.

In the evenings and sometimes during the night I hung out and talked with drug users. Whenever possible, I observed and discussed their drug preparation and use patterns. Contacts were mostly made through the local Soros Foundations and sometimes at needle exchange programs, of which there were only a handful: too few to stop the epidemic, despite the good intentions.

Thus, in early 1995 I was sitting in a car on a hill in Skopje, Macedonia, with the presidential villa just 200 meters up the road. Behind the wheel was a 19 year old sleek Macedonian clubber, who, when we met, kept his cravings for smoking heroin under control with very expensive Naltrexone®. His father was an important public figure, who I had met through the local Soros foundation. Naltrexone® was apparently not an option for his two friends in the backseat, Albanian Macedonians, because as soon as the car stopped they pulled out half a gram of heroin and showed me the various ways they smoked their drug, chasing it from tinfoil and in joints.

Whenever I got the chance, I tried to engage in such 'quick and dirty' field work during my travels through Central and Eastern Europe. I observed and talked with drug users about their drug use in Macedonia, Slovenia, Croatia, the Czech and Slovak republics, Poland, Russia, Ukraine, Moldova, Kazakhstan and the three Baltic countries. Where I could not undertake fieldwork myself, I urged doctors and outreach workers to go out into the field to document drug preparation and injecting patterns. This resulted in viewing many hours of video of mostly young people preparing and injecting drugs. In 1999 I conducted weeklong site visits to needle exchange programmes in five Russian cities, as part of an evaluation study of needle exchange programmes. In four of them I minutely documented the self preparation of injectable opiates and stimulants, taking photographs and writing detailed field notes.

3. Descriptive ethnography of drug injecting

Globally, a significant minority of non-medical drug users prefer to inject their drugs. They do so for various reasons, which I will discuss further below. First, we will take an ethnographic tour of the mechanics of the injecting ritual (Agar, 1977; Grund, 1993a).

Opiate injection

Heroin

The man starts to prepare a shot. He puts his spoon on the table and throws in a knife tip of brown heroin. He adds some lemon juice and with his syringe he gets some water which he carefully squirts in the spoon, around the heroin powder

just under the edge of the spoon. He heats the spoon and when the stuff has dissolved he stirs and draws the solution in the syringe through a piece of cotton. After checking the syringe for air bubbles, he puts his syringe on the table. Then he takes his belt and puts it around his left arm. Making a fist he pumps up his veins. He looks carefully at his arm and then sticks in the needle. When he pulls the piston back, blood immediately runs into the syringe. He then pushes the piston about halfway home. Then he draws up some blood and pushes the mixture into his vein again. He moves the syringe a little, draws ± 1.5 cc. blood and pushes it in once more. All the time his hand is a fist. Then he unties the belt, pulls the needle out, puts it down and waits about two minutes, concentrating on the rush (Grund, 1993a).

This extract from my field notes, recorded at the end of the 1980s in Rotterdam, the Netherlands, provides us with a good impression of the intravenous self-administration of heroin. The entire behavioral sequence did not take more than a few minutes. It can be even quicker, as I witnessed while doing field research in New London, Connecticut, in 1993-1994. I had just picked up Gregg (not his actual name), a local drug injector, who was interested in the study and helped me with the fieldwork, which had just commenced. We were driving to the projects on the edge of town, for me not yet familiar territory. Gregg pointed me to a quiet, somewhat bushy side street. Gregg had asked me before whether it was okay to get straight, but it was not quite clear to me where and when he intended to do so. As soon as the car halted, Gregg did his thing:

Gregg pulls out a sealed 1ml. B&D Insulin from the seam of his jacket. In his other hand he has a (typical east coast) glassine one-unit heroin bag, stamped with the dome of the White House and the brand name *President*. After traveling up the I-95, President sells for \$20.- a bag in New London. That is a 100% markup compared to the streets of New York, from where this *Brand* originates. But, according to Gregg, the dope currently around is of excellent quality, that is, if you know the right places and people. As if to make a case in point, Gregg tears open the glassine and carefully empties it in the small plastic cap that protects the back of the plunger of the syringe. He squirts in a few units of water, which he had drawn from a tiny bottle (received from the intervention I was studying). Then he pulls the plunger from the syringe and uses it to stir the heroin into solution, which happens instantly. He reinserts the plunger, puts a little cotton ball in the cap and pulls the liquid into the syringe. After checking for air, Gregg simply roles up his left sleeve, makes a fist and injects in his armpit. As soon as the blood registers, he pushes the heroin into his vein and pulls out, covering the injection site with an alcohol pad, which I did not see him use pre-injection. Immediately, he rinses the needle and puts it back in the seam of his pocket. The empty bag is tossed out of the window. Within a minute after halting the car, Gregg is ready for fieldwork (Grund, unpublished field note, New London, CT, 1994).

Kompot & Cheornaya (Black)

The situation I observed across Eastern Europe and Central Asia seemed quite different from what I had witnessed elsewhere. My observations suggested that young people throughout the former Soviet Union (FSU) engaged in very similar collective drug preparation and injecting patterns, which seemed engineered for the transmission of HIV and other BBVs. Outreach workers and doctors working in the initial harm reduction programs in the region reported that these were not isolated cases, but part of a widespread practice among youth in most cities and increasingly in rural areas.

While the use of (imported) heroin has increased rapidly in many cities, illicit drug use patterns in this region are characterized by a tradition of kitchen production of drugs. At the end of the 1970s, chemical students in Gdansk, Poland boiled down the chemical process to prepare heroin to its basics: they “cooked” the dried poppy heads into an injectable concoction of opium alkaloids, using readily available household and industrial chemicals. This process came to be known by the name “Kompot” and diffused rapidly across Poland. In the 1980s Poland experienced a rapidly escalating HIV epidemic among kompote injectors. In the early 1980s a simplified version of the process, which can be conducted on an ordinary kitchen stove, spread through the FSU under names, such as “Cheornaya” and “Shirka.”

The tradition of self production is rooted in two related and older traditions. Firstly, the poppy flower has been prepared for culinary, (self-) medicinal and, presumably, recreational purposes, throughout the region since time immemorial. Secondly, the regional tradition of “Zamogon” (moonshine) seems to have provided a model for the self-preparation of a number of psychoactive substances other than alcohol. Thus, for many years, drug users throughout the region used relatively simple ‘kitchen chemistry’ to produce potent injectable opiates and amphetamines. In the former Czechoslovakia, Russia, Ukraine and other FSU countries, drug injectors also cooked up ephedrine-based medications into injectable methamphetamine (“Piko,” “Vint”) and methcathinone (“Jeff”), both powerful psychostimulants. The following field note documents the self-production of Cheornaya:

Belii starts cooking 7 bags of opium in the living room. He scrapes the plastic bags and puts the gum into an enamel bowl. He adds a little water and with a teaspoon he mixes the two while heating the bowl on a hot plate. Then he covers the mixture in “Razvoritel 646” (ethyl acetate) and adds quite a lot of soda. He explains that he uses about one teaspoon of soda for every gram of opium. He stirs the lot while the ethyl acetate is boiling. He does not put a saucer with cold water on top of the bowl (as I have observed in various other places) and soon the room is filled with ethyl acetate fumes. Then he pours the ethyl acetate into a

glass, carefully not to get any of the opium sludge into the glass. Adding more solvent and soda to the opium sludge, he repeats this process 3 times. Then he puts the content of the glass in another enamel bowl. And now he starts to boil this until almost all of the ethyl acetate has evaporated. By now the smell of the ethyl acetate—Cf. acetone—is almost intolerable: Both fieldworker Vitalic's and my eyes hurt and are running.

When almost all of the ethyl acetate has evaporated, he adds a little water and resumes heating for a while. At a certain moment, he gets up and brings the bowl into the kitchen. He puts it on the stove and goes on with heating it until only a film is left. He adds acetic anhydride and a little water and while wiggling the bowl constantly he evaporates all liquid again. They call this "second stage cleaning" (which is in fact not cleaning, but acetelyzing the morphine into mono- and diacetylmorphine). Then he adds water to dissolve the film and draws it into a 20ml "Viborka" (working syringe), using cotton on the hub as a filter.

Subsequently, the liquid is shared among eight users by squirting it into their syringes (frontloading) and, while "Girl, you'll be a woman soon" from the Pulp Fiction soundtrack blares from the stereo, everybody starts getting busy with getting off. They inject in couples, helping each other looking for and bringing up veins. Denis shouts "Tarentino, Cool!" After he got off, he tells me how much he loves this director's work and that he has many videos of his films. While speaking, he makes a self-injection gesture with a smirk on his face (Grund, unpublished field note, Nizhniy Novgorod, Russia, 1999).

Nizhniy Novgorod is located on an important drug trafficking route, and by the summer of 1999, when this field note was recorded, opium gum had replaced the poppy straw that is still commonly used in many parts of the region. When poppies are used, the heads are ground, mixed with a few spoons of soda and a little water and then immersed in the ethyl acetate. From that point on the process is basically the same. Cooking poppies may be more characteristic for the Eastern European region, while in Central Asia, closer to the opium production areas, opium is more widely used.

Processing poppies into crude injectable opioid cocktails may also be practiced by some users in the USA, as witnessed by discussions on poppy growing and chemistry on Internet User Groups. The following is an excerpt of one of those discussions:

"I always cook the opium latex that I get from my fresh pods (this batch is hens and chicks, and Persian whites) when nice and ready. This cooked opium is definitely better for use in isolating the morphine with glacial acetic acid, then turning that morphine into heroin via acetic anhydride. Or you could just use the cooked opium itself, but my tolerance dictates at the very least the isolation of the morphine, even for injection purposes. ... It is surprising the quality and potency of the heroin that one can make in their garage with relatively little

equipment. ... I almost wish heroin #3 wasn't so easy to make from these pods, no I don't..." (Negrogesic, 2003)

Injection of opium solution and Blackwater in Asia

*"The old Chinaman dips river water into a rusty tin can,
washes down a yen pox hard and black as a cinder"*
(WS Burroughs, 1959).

Just as Europeans can look back at an ancient and rich viniculture, in Asia recreational and medicinal opium consumption (smoking and oral ingestion) is part of an ancient tradition that took roots in all classes of society in countries as distant and diverse as Persia and China (Berridge & Griffiths, 1981). Throughout history opium has been the principal if not the only national drug in many Asian countries. While poppies are traditionally cultivated on a small scale throughout Asia, nowadays the "Golden Triangle" (Burma/Myanmar, Laos and Northern Thailand) and the "Golden Crescent" (Afghanistan) produce the majority of the world's opium and heroin. While smoking remains the primary mode of opium and heroin use in these production areas and elsewhere in Asia, in the last decade drug injecting has made an important inroad. Heroin injecting has diffused along trafficking routes into the majority of Asian countries. China, for example, has become a main destination market for Golden Triangle heroin and reportedly now imports Golden Crescent heroin as well. There may now be 2-3.5 million heroin users in China, who consume about 200 tons of heroin every year (Fabre, 2003). But injecting opium has a longer history in the region.

Injecting liquefied opium surfaced in the 20th century, most likely introduced by Western sailors. Two preparations have been described in the literature: a solution of raw opium and "Blackwater" or "Yen Pox." These practices remain prevalent today, with recent reports coming from e.g. Afghanistan, Brunei Darussalam Cambodia, China, Iran, Laos, Pakistan and Viet Nam, (CHR/AHRN, 2003; Reid & Costigan, 2002). While a number of authors mention the practice of blackwater injecting (CHR/AHRN, 2003; Reid & Costigan, 2002; Tran et al. 2004; Doussantousse & Thanh Hoa, 2001), detailed ethnographic descriptions, such as those by Power (1996), are rare.

Raw opium is prepared for injecting by boiling in water and filtering out the solid particles with cheese cloth or muslin, cotton wool or other filtering material. Blackwater opium is a residual product from smoking prepared opium. Although William Burroughs (1959) refers to the Chinese "yen pox" as the ash that remains in the bowl of the opium pipe, it is not. Black water opium results from scraping out the stems of the opium pipe. Yen pox or "thuoc phien," Vietnamese for blackwater, is built up during smoking, as the smoke is deposited on the inside of the pipe. It contains ash particles drawn into the pipe, but its solid content is very low, as

most of the solid plant material in the smoking opium has been burned in the bowl. Therefore, when heated it quickly liquefies, which makes it unsuitable for smoking from an opium pipe.

As Berger (1979) wrote, nothing is wasted in survival economies and the “hard black cinders” have significant currency value. Opium den staff regularly clean out the opium pipes and the yen pox is collected is subsequently reentered into the lowest echelon of the drug economy, where proprietors catering for opium smokers meet their colleagues who service injectors. As Robert Power observed in Hanoi and Ho Chi Minh City in 1993, the residue is bought by shooting gallery managers, who seemed to collect thuoc phien from a network of opium smoking dens around the city. After their collection round, these independent entrepreneurs prepared the blackwater opium for injecting.

As with raw opium, blackwater opium is prepared for injecting by first boiling it in water. After the first water extraction, the suspension is filtered through a muslin cloth and the residue is reboiled and refiltered up to three times. Subsequently all the extractions are mixed into one and the resulting solution is stored in a “pot,” which could be a cup, mug or beer bottle. This refining process reportedly removes most of the impurities. (Power, 1996). Opium injectors rate blackwater over solutions made from raw opium. In Power’s study of Vietnamese IDUs only a minority purchased raw opium as it was deemed to be weaker than blackwater (Power, 1996).^{*} Reportedly, blackwater opium contains up to 8 per cent morphine (CHR/AHRN, 2003), which is more than average quality raw opium.

The blackwater was subsequently served to the customers of the “shooting-galleries,” ‘take out’ being an exception in Power’s study. Customers would buy some 3ml. of blackwater, whereupon the “Chu” (dealer/gallery keeper) would mostly use a (glass) gallery syringe to draw the opium solution from the common “pot” and would then, reportedly routinely, inject the drug into the customer’s body, often mixed with a range of diverted psychoactive pharmaceuticals (narcotic analgesics, benzodiazepines, barbiturates), which were on offer as well. Power provides vivid case notes of the goings-on at shooting galleries in Hanoi and Ho Chi Minh City in 1993, in which one can read *disease transmission* between every pair of lines.

The proliferation of heroin use in Asia and the repression of the cottage industry that developed around the venues where opium solutions are traditionally injected have resulted in their decline (Tran et al. 2004; Doussantousse & Thanh Hoa, 2001). Law enforcement is probably implicated in both the diffusion of opium injecting and its decline, in both Asia and Western Europe. Westermeyer (1976), for example, documented the relationship between the repression of opium smoking with the emergence of both injecting drug use and heroin use within months of the establishment of anti opium laws in Hong Kong, Laos and Thailand. In the 1960s in Holland opium injecting was prevalent among “cultural rebels,” who obtained their supplies in the China towns of Amsterdam and Rotterdam. This ended abruptly in 1972, when,

^{*}Heroin smokers in the Netherlands and crack smokers in New York consider the drug deposit recovered from their smoking implements as a precious delicacy as well (Grund 1993a).

after Dutch law enforcement declared a major victory against the Chinese opium trafficking rings, heroin flooded the drug markets of Amsterdam and Rotterdam (Grund & Blanken, 1993).

Morphine

There are case reports of morphine* injection from several Asian countries, but this does not seem to be widespread (Reid & Costigan, 2002). Early drug injectors in the Soviet Union reportedly injected diverted morphine (called “Steklo”) (O. Balakireva, personal communication). A significant proportion of IDUs in Vienna, Austria inject morphine. The centrally located Karlsplatz houses a lively market in diverted pharmaceutical grade morphine, which is prescribed in oral slow-release preparations as part of substitution treatment for heroin addiction, mostly provided by general practitioners. While official statistics are unavailable, quite a few doses of Compensan®, Kapanol CSR®, Mundidol®, Substitol® and Vendal® end up being injected. One user explained how to isolate the morphine from a Compensan® tablet:

It is quite simple; first you wash off the tablet’s pink coating and then you crush it really fine. Put about 3-4 ml. In a spoon and bring it to a boil. Only when it boils, you throw in the powder, not before, otherwise it becomes custard (Grund, conversation with seller, Karlsplatz, Vienna, 2003).

Cocaine injection

Cocaine hydrochloride dissolves in water without the necessity of additional chemicals or heating. Little preparation is required to inject (relatively pure) cocaine, as can be seen in the following field note:

While talking, Alex peeled some cotton threads from the lining of his jacket. Between his fingers he rolled them into a little ball. From his pocket he took a spoon and a little package containing cocaine. He put the coke in the spoon with a little water and stirred it. Next he put in the little ball which he used as a filter. He drew up the cocaine and took his shot (Grund, 1993a).

When the cocaine is of relatively poor quality users may heat the solution.

In the last few years reports of crack injection have emerged from the US and some European cities. Crack is cocaine specifically prepared for smoking (generally by the dealer) by separating the base from the hydrochloride. To inject crack, it must be re-acidified by the end-consumer (who probably was unable to find powder cocaine). When prepared for injection, crack is acidified in the same manner as the South-West Asian heroin base in the field note from Rotterdam above.

Cocaine is sometimes combined with heroin, called a ‘speed ball’ or ‘cocktail’:

* including diverted ampoules of pharmaceutical morphine and illicit morphine-base.

Doug starts to prepare a cocktail of heroin and cocaine. He puts some heroin in the spoon and adds some lemon juice and water. Then he boils the contents with his disposable lighter. When the heroin has dissolved he puts the spoon back on the table and waits a few moments. Then he carefully puts his fingertip in the solution in the spoon; "it's okay now", he says, referring to the temperature of the solution. He holds the package with cocaine above the spoon and with a knife he shoves the cocaine into the spoon. He then stirs the cocaine through the heroin solution with the plastic needle-protector from his syringe and draws it into his syringe (Grund, 1993a).

Amphetamines

Like cocaine, powder amphetamine of sufficient purity dissolves in water at room temperature, but often it is of poor quality and must be heated in order to go into solution. IDUs in several former 'East- Bloc' countries have also produced two stimulants—methamphetamine ("Vint") and methcathinone ("Jeff")—from ephedrine, either distilled from ephedrine-based medications (e.g. Solutan®) or from ephedrine crystals bought on the black market. Vint is produced by reducing ephedrine, using the following chemicals: red phosphorus, black "crystal" iodine, H₂SO₄, household soda and H₂O. The next field note documents the process when starting with ephedrine crystals:

Dima mixes the ephedrine and the red phosphorus in the wrapper. Then he puts the mixture and some lumps of black iodine in a "Reactor" (a small glass medication bottle). He closes bottle with a rubber stopper with a little glass tube through it and shakes it, heating it shortly with a lighter a number of times. The reaction is visibly going on in the bottle: the three chemicals are forming into a little expanding ball (all-in-all this takes some 10 minutes). Then he adds H₂SO₄ and on-and-off he heats the mixture for at least 30 minutes. Several times he cleans the soot from the flame from the outside of the "reactor." Several times, he smells the fumes that come out of the bottle. He explains that he can determine whether the reaction is completed, based on the smell. (I smelled the fumes once, and it did not smell pleasant.) At the beginning of the process the solution was very red; at the end it was light reddish-brown.

When the reaction is completed, Dima adds about 4ml of H₂O and the solution is light yellowish with a residue of lack particles. In the meantime, his pal Denis has cut a 20 ml syringe in two and melted the hub closed. From this moment he takes over. He wraps cotton wadding around a large bore needle and draws up the liquid from the reactor and squirts it into the prepared 20ml barrel. He adds a few "needles" of household soda and the solution starts bubbling, neutralizing the acidic solution. He makes a new cotton filter around another needle and he draws

the solution into three 2ml. syringes. One he gives to Dima, who walks away a few meters to shoot up. With the second, he injects himself. The third is later divided with another 2ml. syringe. When they shoot up both men seem to experience an intensive rush (both cover their eyes with a cloth and lay down for some minutes). (Grund, unpublished field note, Pskov, Russia, 1999).

When starting with ephedrine-based medications, the ephedrine needs to be isolated first and this is done by mixing the medication together with a base into gasoline. After adding HCl, the ephedrine crystals or “flakes” precipitate at the bottom of the container. The crystals are subsequently removed from the gasoline and dried. While the described production of methamphetamine seems rather complicated, this field note was recorded in a field near the river Pskova, demonstrating that it can be done anywhere.* Turning ephedrine into methcathinone is much easier: ephedrine is simply mixed with permanganate in acidic water at room temperature for about 15 to 20 minutes. Both these processes end with liquid drugs that are subsequently injected. While both drugs could be simply dried and ingested by other modes, reportedly this seldom happens.

Other drugs

Few IDUs limit themselves to one class of drugs. In addition to cocktails of opiates and stimulants, many use prescription drugs, benzodiazepines in particular. Some Australian injectors reportedly inject ecstasy and LSD in the early 1990s (Moore, 1993). In many Asian countries IDUs inject pharmaceutical drugs, either diverted from legal distribution channels or simply bought over the counter. In India, heroin effectively replaced opium and cannabis as the drug of choice, but most users chased the drug. Injecting increased rapidly when users discovered buprenorphine, which reportedly was injected during medical treatment for heroin addiction. During the 1990s, injection of (cheap) Tidigesic® (buprenorphine) quickly spread throughout most major urban centers of the Indian subcontinent. Most users inject cocktails of illicit and diverted psychoactive drugs, including heroin, buprenorphine, diazepam, pentazocine, and pheniramine maleate. (CHR/AHRN, 2003; Reid & Costigan, 2002; Burrows, Panda & Crofts, 2001). During the 1990s, some heroin injectors in Skopje, Macedonia were observed dissolving their black market heroin in diverted ampoules of diazepam (Grund & Nolimal, 1995). A large proportion of heroin and/or cocaine injectors in Western Europe consume benzodiazepines, often to overcome the side effects of heavy cocaine use. It is worth mentioning that not all of them inject these prescribed or diverted medications. Thus, in the Netherlands, where by comparison the prevalence of injecting is very low, most heavy heroin/cocaine users take benzodiazepines, such as diazepam (Valium®) and flunitrazepam (Rohypnol®), orally, whereas less than 500km. to the South-East, in Frankfurt am Main the same drugs are mostly injected.

* It is interesting to observe that home production of methamphetamine (“Crank“ or “bathtub speed”), using pseudo-ephedrine-based medications in a similar process evolved in the Mid-West of the US in the 1990s. Over the last 10 years production and distribution professionalized and methamphetamine use spread all over the US.

Conclusions

Injecting has been the predominant route of self-administration among opiate (heroin) users in Western societies while smoking has been the most common route in Eastern societies. However, there has been a process of continual 'crossover' with Western routes appearing in the East and Eastern routes appearing in the West. But despite its ongoing diffusion across continents and cultures, globally injecting opiate users remain outnumbered by those who ingest these drugs by method of ingestion, sniffing, smoking or inhalation. Neither is injecting drug use the inescapable end stage of a progressive sequence towards more efficient administration modes, as is frequently suggested by both scientific and lay publications. This observation has merit at both the level of the individual consumer (see e.g. Southwell, chapter 14) and that of 'drug culture.' In the last quarter of the 20th century shifts away from injecting have appeared in the USA (towards sniffing) (Grund, 1998) and Europe (towards 'chasing the dragon') (EMCDDA, 2001), most notably in the Netherlands (Grund & Blanken, 1993).

The observations presented in this chapter suggest a wide range of behavioral patterns around the injection of opiates, which are primarily determined by the practical considerations of getting high, preparing drugs, even producing drugs by means of "kitchen chemistry," and injecting these into the body. Obviously, injecting drugs in Russia and other post-Soviet countries requires a larger set of paraphernalia and ingredients, specific knowledge of organic chemistry and a much more controlled, indoors, environment (while heroin injection has less demanding environmental requirements). Novice IDUs must learn the knowledge and skills to bring this sequence to the desired end. Such knowledge and skills are communicated through social learning processes within the networks of drug using young people. Indeed, drug injecting is often, if not mostly, a social activity, in which drug users work together towards the shared goal of getting high. This is especially obvious in Eastern Europe where the practical reasons for collaboration are most demanding:

"It is very seldom when you use alone. At minimum you use with two or three people. ... "Somebody has money for drugs, a second knows where to get good drugs, a third has some anhydride or a place to cook and yet another has syringes. ... It is also much cheaper to use in groups."

Why inject?

Given the range of health problems associated with injecting (see Scott; Crofts; Heimer; McBride & Wichter [all this volume]; Grund, 1993, Ch. 10) and that there are viable alternatives, why would people opt to inject their drugs? This is not an easy question to answer, as it mostly

concerns an intricate mesh of factors and motivations, which are perhaps best understood within Zinberg's framework of 'drug, set and setting' (Zinberg, 1984).

Drug

When probed, many IDUs will mention their appreciation of the immediate pharmacological impact or rush following an injection of heroin, amphetamines or cocaine. This is especially apparent among cocaine injectors.

Karel is shooting up cocaine. He puts the coke in the spoon, stirs, pulls it up through a piece of cotton and shoots the coke without using a belt. The rush makes him sweat very much. "It's an extreme flash, it's very good coke," he says, "I always take the coke first, cause I want to enjoy the coke-flash. A little later I take the brown."

But freebasing cocaine reportedly can produce a similarly intense rush (Gawin & Kleber, 1986; Wallace, 1990). Likewise, in some drug scenes (in various European cities, for example) users inject their heroin, but smoke their cocaine. Therefore, the pharmacological properties are not a sufficient explanation for the dominance of injecting among certain populations of heavy users.

Set

Quite a few users will tell that personal factors, such as curiosity about the rush drove them to their first injection. Curiosity or experimentation is also mentioned as a reason for injecting other drugs, such as ketamine, ecstasy or psychedelics, such as LSD, but in most places these concern isolated cases, although the injection of "Calypso" (diverted medical ketamine) gained quite a level of popularity among Russian university students in the 1990s. Probably a small minority of injectors seems to have fallen in love with the needle as such and several case reports can be found in the literature of IDUs booting for extended periods (just pumping blood up and down the syringe/vein for several times, without an objective pharmacological effect as there is no measurable drug left in the content) and injecting liquor or merely water, just to experience the act of injecting. Such Pavlovian conduct has led to the formulation of a psychological theory of "needle fixation" (Pates, McBride and Arnold, this volume), which without doubt has some resonance in certain drug cultures. For example, in the Frankfurter 'Bahnhofsviertel,' the main station area where most Frankfurt street users congregate, I observed a man in his thirties inject. He was dressed in a black leather jacket and trousers, the trousers round his ankles. He wobbled on his spot for at least 15 minutes, enjoying his high and, as it seemed, flashing the syringe hanging from his femoral vein, while his girlfriend (heavy stoned and also sparsely dressed in leather) snuggled up against one of his legs. "Nadelgeil," murmured the worker of the injection room just around the corner, who accompanied me. However, during my various fieldwork periods I have seen quite some people busy with injecting for extended periods, but in all but one case this was associated with problems finding a suitable vein. Given the relative rarity of such idiosyncratic behaviors, it is unlikely that curiosity or other

individual motivations or traits fully account for the adoption of injecting by majorities of consumers in certain places and not in others.

Setting

The shifts away from injecting in the Netherlands (towards chasing heroin and basing cocaine) and the USA (towards snorting heroin) have been explained as an interaction of economic and social cultural variables. For example, over the last 25 years the purity of heroin and cocaine in the Netherlands has been at a level high enough to allow for non-injecting administration modes. Combined with community norms rejecting injecting this resulted in the gradual decline of the prevalence of injecting among heroin users. In the second half of the 1990s, this also seemed to be the case in Macedonia (which remains an important hub on the Balkan Route, along which Afghan heroin is transported to Europe). Although I met several injectors in Macedonia, and although the prevalence of IDU has reportedly increased over the years, injecting appeared to be perceived as unattractive among young people:

Ali and Mohammed are uncertain which mode is practiced most, chasing or smoking in cigarettes. "We do it both. I guess it depends on where you are or who you are with. Sometimes I snort it," explains Ali. When I ask him whether he has ever injected, Ali almost gets upset. He vehemently shakes his head and very resolutely says he never did and never will inject: "That's very bad, it's dirty. You will never see an Albanian injecting." He rapidly translates my question to Mohammed, who underscores his partner's assertion in German: "Nein, nein, nicht gut. Man soll das nimmer machen." (No, no, not good. One should never do that.) (Grund & Nolimal, 1995)

Conversely, the specific self-preparation practices of opiate and stimulant drugs in Eastern Europe result in the availability of liquid drugs that are easily injected. The ubiquitous practice of injecting medical drugs (which could be administered orally or by other modes with similar treatment outcomes) in the former Soviet Union may well have contributed to lowering the stigma associated with recreational injecting. During the Soviet times young kids were taught not to fear the needle. Health promotion posters of an infant hand-in-hand with a syringe and with the text "I am not afraid of injecting and, if needed, will inject right away," were hanging in many kindergartens.

Many studies point towards the policy environment associated with the use of illicit drugs, in particular to the effects of consumer level drug supply reduction strategies. When, as a result of supply reduction measures, heroin is very expensive and, in particular, of low purity, its users are driven towards injecting the drug. Within months after the establishment of anti opium laws in Hong Kong, Laos and Thailand, injection heroin use appeared suddenly (Westermeyer 1976). In contrast, when opiates are relatively inexpensive and of reasonable quality, users feel no pressure to initiate injecting. Interestingly, already in 1998, the United Nations pointed towards the

relationship between drug availability (and drug supply reduction measures) on the one hand and HIV risk behaviours on the other:

"Where injecting drug use already exists, reducing the supply of illegal drugs alone does not necessarily help. In fact, it can even increase risky injecting behaviour. When drugs are plentiful, many users choose to smoke rather than inject. However, injecting delivers a "high" with a smaller drug dose than smoking, so people may switch from smoking to injecting if their usual supplies shrink. A study in Calcutta showed that huge seizures of heroin in the city were followed by a sharp rise in the proportion of drug users choosing to inject." (UNAIDS/WHO, 1998)

As expressed by Des Jarlais, Courtwright & Joseph (1991), "[p]olicy choices form the environment in which illicit drug use patterns will evolve, but do not completely determine those patterns." Thus, while we may be unable to prevent the use of certain substances, certain policy choices and interventions may influence whether these are injected or taken into the body by less hazardous administration modes, and perhaps limit the harm, experienced by its users, their families and the rest of society.

Notes and References

- Aceijas C., Stimson G.V. Hickman M., Rhodes T. 2004 on behalf of the United Nations Reference Group on HIV/AIDS Prevention and Care among IDU in Developing and Transitional Countries. Global overview of injecting drug use and HIV infection among injecting drug users. *AIDS* 2004,18 :2295 –2303.
- Agar MH: Into that whole ritual thing: Ritualistic drug use among urban American heroin addicts. In: Du Toit BM (ed.): *Drugs, rituals and altered states of consciousness*. Rotterdam: Balkema, 1977: 137-148.
- Berger J: *Pig Earth, Historical Afterword*. New York: Pantheon, 1979, pp. 195-213.
- Berridge, Virginia and Griffith, Edwards, *Opium and the People*, St. Martin's Press, New York, 1981
- Burroughs WS. 1959. *Naked Lunch*. Paris: Olympia Press.
- Burrows D, Panda S, Croft N: *HIV/AIDS prevention among injecting drug users in Kathmandu Valley*. Melbourne: The Center for Harm Reduction, 2001.
(<http://www.chr.asn.au/freestyler/gui/files//NepIDUKathValley.pdf>)
- CHR/AHRN. *Manual for Reducing Drug Related Harm in Asia*. Melbourne: The Centre for Harm Reduction, Macfarlane Burnet Centre for Medical Research and Asian Harm Reduction Network, 2003.
- Crofts (this volume)

Des Jarlais DC, Courtwright DT, Joseph H: The transition from opium smoking to heroin injection in the United States. *AIDS & Public Policy Journal* 1991; 6(2): 88-90.

Donoghoe M.C. & Wodak A. 1998. Health and Social Consequences of Injecting Drug Use. In Stimson G.V., Des Jarlais D.C. & Ball A. (Eds.) *Drug Injecting and HIV Infection*. London: UCL Press/ WHO.

Serge Doussantousse & Nguyen Thanh Hoa. The life and times of the Hanoi drug user: Some recent insights from field research. A research Report for the UNDCP, UNAIDS Vietnam, April 2001. (<http://www.undp.org.vn/projects/vie98006/RDU.htm>)

Editorial: HIV/AIDS and Injection Drug Use Epidemics: International Trends. *CDUHR News*, 2002 <5(1): 1-3. (Center for Drug Use and HIV Research National Development and Research Institutes, Inc.)

EMCDDDA. Annual report 2001 on the state of the drugs problem in the European Union. Luxembourg Office for official publications of the European Communities, 2001. (<http://ar2001.emcdda.eu.int/en/download/index.html>)

Fabre G: The Black Hole of China White. Presented at TNI/BCN conference Burma, Drugs & Conflict. Amsterdam, December 2003.

Gawin FH, Kleber HD: Abstinence symptomatology and psychiatric diagnosis among cocaine abusers. *Archives of general psychiatry* 1986; 43: 107-113.

Garriott JC, Sturner WQ: Morphine concentrations and survival periods in acute heroin fatalities. *New England Journal of Medicine* 1973; 289: 1276-1278

Grund J-PC, Stern LS, Kaplan CD, Adriaans NFP, Drucker E: Drug use contexts and HIV-consequences: The effect of drug policy on patterns of everyday drug use in Rotterdam and the Bronx. *British Journal of Addiction's special edition on HIV/AIDS* 1992; 87: 381-392.

Grund J-PC: Drug Use as a Social Ritual: Functionality, Symbolism and Determinants of Self-Regulation. Rotterdam: Addiction Research Institute (IVO), 1993a (<http://www.drugtext.org/library/books/grund01/grundcon.html>).

Grund J-PC. Health consequences of chasing and injecting: a comparison (Ch. 10). In Grund J-PC: *Drug Use as a Social Ritual: Functionality, Symbolism and Determinants of Self-Regulation*. Rotterdam: Addiction Research Institute (IVO), 1993b (<http://www.drugtext.org/library/books/grund01/grund10.html>).

Grund J-PC, Blanken P: From 'Chasing the Dragon' to 'Chinezen': the Diffusion of Heroin Smoking in the Netherlands. Rotterdam: Addiction Research Institute (IVO), 1993.

Grund J-PC & Nolimal D: A Heroin Epidemic in Macedonia. A report to the Open Society Institute New York & the Open Society Institute Macedonia. New York: The Lindesmith Center, 1995. (<http://www.drugpolicy.org/library/tlcmaced.cfm>)

Grund J-PC: From the Straw to the Needle? Determinants of Heroin Administration Routes. in Inciardi JA and Harrison LA (eds.): *Heroin in the Age of Crack-Cocaine*. Drugs, Health, and Social Policy Series, volume 6. Thousand Oaks: Sage Publications, 1998, pp 215-258.

Grund, Jean-Paul, Larissa Botschkova, Yuri Kruglov, Violetta Martsynovskaya, Alla Scherbinskaya, Lidia Anduschak. *QUO VADIS? A Case Study of the Ukrainian HIV Case Registration System*. Kiev: Ukrainian AIDS Center, Ministry of Health, 2003 (in press in Ukrainian)

Huizer H: Analytical studies on illicit heroin. V. Efficacy of volatilization during heroin smoking. *Pharm Weekblad (Scientific Edition)* 1987; 9: 203-211.

International Journal of Drug policy: Special Focus Issue: Hepatitis C and Drug Injecting. 2004: 15(2), pp 81-163.

Maher L: Don't leave us this way: ethnography and injecting drug use in the age of AIDS. *International Journal of Drug Policy* 2002, 13(4) 311-325.

Mann JM. Human rights and AIDS: the future of the pandemic. In: Mann JM, Gruskin S, Grodin MA, Annas GJ. *Health and human rights*. New York and London: Routledge, 1999:221.

McBride and Wichter (this volume)

Mo BP and Way EL: An assessment of inhalation as a mode of administration of heroin by addicts. *J Pharmacol Exp Ther* 1966; 154: 142.

Moore, D. 1993. 'Speeding, ecking and tripping': Ethnographic notes from a small world of psychostimulant use. In *Illicit Psychostimulant Use in Australia*, D. Burrows, B. Flaherty, and M. MacEvoy, (eds), Canberra: Australian Government Printing Service, pp. 71-90.

Moore D. (2004) Governing street-based injecting drug users: a critique of heroin overdose prevention in Australia. *Social Science & Medicine*, 59 (7), Pp. 1339-1559.

Negrogesic (from Southern California) on opium chemistry. Posted: 29-10-2003 07:33 (posting #1364413) at <http://www.bluelight.nu/vb/showthread.php?threadid=105008>.

Pates and Wichter (2004) (this volume)

Pates, McBride and Arnold (this volume)

POWER R. Rapid assessment of the drug-injecting situation at Hanoi and Ho Chi Minh City, Viet Nam. UNDCP, 1996.

Reid G & Costigan G: Revisiting 'The Hidden Epidemic.' A situation assessment of drug use in Asia in the context of HIV/AIDS. The Centre for Harm Reduction, The Burnet Institute, Australia, 2002.

Rhodes, T. (2002). The 'risk environment': A framework for understanding and reducing drug-related harm. *International Journal of Drug Policy* 13 85 –94.

Selwyn P.A. 1993. Illicit drug use revisited: What a long, strange trip it's been. *Annals of Internal Medicine*, 119, 10, pp. 1044-6.

Scott (this volume)

Stimson and Choopanya [TITLE] in: Stimson, G., Des Jarlais, D.C. and Ball, A. (1998). **Drug Injecting and HIV Infection: Global Dimensions and Local Responses**, UCL Press, London.

Stimson, G., Des Jarlais, D.C. and Ball, A. (1998). **Drug Injecting and HIV Infection: Global Dimensions and Local Responses**, UCL Press, London.

Strang, J. and Wells, B. (1988) Amphetamine Abuse, Update. **The Journal of Postgraduate General Practice**, pp 1618-1625.

Tran, T. N., Detels, R., Hien, N.T., Long, H.T. and Nga, P.T.H. (2004) Drug use, sexual behaviours and practices among male drug users in Hanoi, Vietnam—a qualitative study. **International Journal of Drug Policy**, 2004, 15(3): 182-188.

UNAIDS/WHO: Report on the global HIV/AIDS epidemic June 1998. (http://www.who.int/emc-hiv/global_report/rep_html/report5.html)

UNAIDS/WHO. Annual AIDS Epidemic Update, Geneva: UNAIDS/WHO, December 2003.
(<http://www.unaids.org/Unaid/EN/Resources/Publications/corporate+publications/aids+epidemic+update+-+december+2003.asp>)

UNAIDS. 2004 Report on the global AIDS epidemic. Geneva: UNAIDS, July 2004.
(<http://www.unaids.org/bangkok2004/report.html>)

UNHCR/UNAIDS. HIV/AIDS and Human Rights: International guidelines. New York & Geneva, United Nations, 1998.

United Nations. Universal Declaration of Human Rights, adopted and proclaimed by [General Assembly resolution 217 A \(III\)](#) of 10 December 1948. (<http://www.unhcr.ch/udhr/index.htm>)

Wallace BC: Treating crack cocaine dependence: The critical role of relapse prevention. Journal of Psychoactive Drugs 1990; 22(2): 149-158.

Wallace R., 1988. A synergism of plagues: planned shrinkage, contagious housing destruction and AIDS in the Bronx, Environmental Research, Vol. 47, pp. 1-33.

Westermeyer J: The pro-heroin effects of anti opium laws in Asia. Archives of General Psychiatry 1976; 33:1135-1139.

WHO. 2004 Website Department of Mental Health and Substance Abuse.
http://www.who.int/substance_abuse/facts/en/ - accessed 04/05/2004

Zinberg NE: Drug, set, and setting: The basis for controlled intoxicant use. New Haven: Yale University Press, 1984.